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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/046,629 | 01/14/2002 | Yuzuru Suzuki | SUM-02301 | 4803 |
| 26339 | 7590 | 08/11/2005 | EXAMINER | |
| PATENT GROUP CHOATE, HALL & STEWART LLP TWO INTERNATIONAL PLACE BOSTON, MA 02110 | | | COMAS, YAHVEH | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2834 | |

DATE MAILED: 08/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/046,629

Applicant(s)

SUZUKI ET AL.

Examiner

Yahveh Comas

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Applicant's arguments with respect to claim 1-18 have been considered but are moot in view of the new grounds of rejection.

The indicated allowability of claims 16-18 is withdrawn in view of the newly discovered references to Kikuta et al in view of Tanaka et al. and Suzuki et al. Rejections based on the newly cited references follow.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the outer rotor type brushless DC motor must be shown or the feature canceled from the claims. No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for

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consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claims 1-18 are objected to because of the following informalities: The use of S and N pole instead of South and North Poles. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 5, 7 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The combination of an outer rotor in with the limitation set by the independent claims such as the stator unit around the rotor unit let claims 5, 7 and 14 indefinite.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 1-2, 4, 8-11, 13, 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kikuta et al. U.S. Patent No. 5,053,664 in view of Suzuki et al. JP 11146616 A in further view of Tanaka et al. JP Patent No. 02106152 A.

Kikuta discloses a motor comprising a rotor unit which is arranged within the motor and includes a single cylindrical field magnet fixed to holder means (12, 13) into which a rotating shaft (9) is press-fitted at a center thereof, said cylindrical field magnet (11) being magnetized such that South and North alternate with each other in a circumferential direction thereof, and a stator unit (15) is circumferentially arranged around said rotor unit and is formed by circumferentially stacking a large number of thin plates. The holder means (12, 13) are arranged at both ends of said field magnet and a sleeve (10) is secured on an inner periphery of the magnet (11). Kikuta discloses the claimed invention except for a stator unit comprising a plurality of stator yokes having a plurality of coil units, each being formed by winding wire on a bobbin and mounted on each of said yokes, and each of the South and North poles having a plurality of stages

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formed in an axial direction and shifted from each other in the circumferential direction of said cylindrical magnet with a predetermined shift amount.

Regarding the coil unit, Suzuki discloses a stator unit comprising a plurality of stator yokes being formed by circumferentially staking a large number of thin plates each of which constitutes a salient pole (23), and a plurality of coil units (12), each being formed by winding a magnet wire on a bobbin (19) and mounted on each of said stator yokes in order to provide a motor structure which can attain a light and long constitution effectively without using a lamination structure which laminates stators of the identical shape in an axial direction, in a cylindrical motor with a radial gap.

Regarding the rotor having each of the South and North poles having a plurality of stages formed in an axial direction Tanaka discloses the use of a rotor having each of the South and North poles having a plurality of stages formed in an axial direction by a predetermined interval in order to reduce vibration and noise.

Therefore, it would have been obvious to one having skill in the art at the time the invention was made to modify Kikuta's invention and provide a stator unit comprising a plurality of stator yokes having a plurality of coil units, each being formed by winding wire on a bobbin and mounted on each of said yokes, as disclosed by Suzuki and each of the S and N poles has a plurality of stages formed in an axial direction and shifted from each other in the circumferential direction of said field magnet with predetermined shift amount as disclosed by Tanaka since this would have been desirable to provide a motor structure which can attain a light and long constitution effectively and reduce vibration and noise.

Regarding claims 2, 11, and 18, it would have been obvious to one having ordinary skill in the art at the time the invention was made to shift the respective stages within a range of 12° to 50°, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233

3. Claim 3 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kikuta et al. U.S. Patent No. 5,053,664 in view of Suzuki et al. JP 11146616 A, in view of Tanaka et al. JP Patent No. 02106152 A and in further view of Hoemann et al. U.S. Patent No. 5,034,642.

Kikuta as modify above, disclose the claimed invention except for the rotor position detection element is adjusted by $\frac{1}{2}$ the shift amount of respective stages.

However, Hoemann disclose a rotor position detection element (17) is adjusted by $\frac{1}{2}$ the shift amount of respective stages (25, 27 and figures 3-7) for the purpose of maintaining an optimum sensor position relative to the rotor field without requiring physical adjustment of the sensor.

Therefore, it would have been obvious to one having skill in the art at the time the invention was made to modify Kikuta's invention and provide a rotor position detection element adjusted by $\frac{1}{2}$ the shift amount of respective stages as disclose by Hoemann since this would have been desirable to maintaining an optimum sensor position relative to the rotor field without requiring physical adjustment of the sensor.

4. Claim 5, 7, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kikuta et al. U.S. Patent No. 5,053,664 in view of Suzuki et al. JP 11146616

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A, in view of Tanaka et al. JP Patent No. 02106152 A and in further view of Carrier et al. U.S. Patent No. 5,717,268.

Kikuta, as modify above, disclose the claimed invention except for the DC motor is an outer rotor type brushless three phases DC motor having eight poles and six stator units.

However, Carrier disclose a DC brushless motor with a eight poles outer rotor (10) and a six poles stator unit, wherein the number of field magnets in arrangement (28) relative to the number of poles in the stator are chosen to achieve an acceptable balance between torque ripple and switching losses.

Therefore, it would have been obvious to one having skill in the art at the time the invention was made to modify Kikuta's invention and provide outer rotor type brushless three phases DC motor having eight poles and six stator units as disclose by Carrier since this would have been desirable to achieve an acceptable balance between torque ripple and switching losses.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kikuta et al. U.S. Patent No. 5,053,664 in view of Suzuki et al. JP 11146616 A, in view of Tanaka et al. JP Patent No. 02106152 A in further view of Burgbacher et al. U.S. Patent No. 4,998,032.

Kikuta, as modify above, disclose the claimed invention except for the DC motor has an inner rotor with eight poles and six stator unit.

However, Burgbacher discloses a DC brushless motor with an eight poles inner rotor (200) and a six poles stator unit (311-316) since in a rotor (200) with a larger

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number of poles (201), the cog height, which narrow the air gap and act like "magnetic cogs" exerting forces on the rotor that are utilized to even out the torque, can be reduce to 1/3 the height.

Therefore, it would have been obvious to one having skill in the art at the time the invention was made to modify Kikuta's invention and provide outer rotor type brushless three-phases DC motor having eight poles and six stator units as disclose by Burgbacher since this would have been desirable to reduce 1/3 of the cogs height which narrow the air gap and act like "magnetic cogs" exerting forces on the rotor that are utilized to even out the torque.

6. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kikuta et al. U.S. Patent No. 5,053,664 in view of Suzuki et al. JP 11146616 A, in view of Tanaka et al. JP Patent No. 02106152 A in further view of Matsuchita et al. U.S. Patent No. 5,856,718.

Kikuta, as modify above, disclose the claimed invention except for a spring provided inside one of said holders.

However, Matsuchita discloses the use of a spring provided inside one of the holders in order to decrease the variation of the pressurization. Therefore, it would have been obvious to one having skill in the art at the time the invention was made to modify Kikuta's invention and provide a spring provided inside one of said holders since this would have been desirable to decrease the variation of the pressurization as disclosed by Matsuchita.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yahveh Comas whose telephone number is (571) 272-2020. The examiner can normally be reached on 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

YC


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